

REMARKS

Claim 1 has been amended to delete the word "aerosol". Claim 2 is directed to methods using an aerosol spray device. Claim 1 is intended to cover corresponding methods in which the spray device is not necessarily an aerosol. Support for such devices may be found in the paragraph beginning at page 3, line 7.

REJECTION UNDER 35 U.S. C. § 103

All of the claims in this application have been rejected under 37 U.S.C. § 103 as unpatentable over WO97/28883 ("Fox '883"), in view of McCue U.S. Patent 5,403,587 ("McCue").

Claims 1-15 are rejected under 35 U. S. C. 103(a) as being unpatentable over Fox et al. (N, PTO-892) in view of McCue et al. (A, PTO-892).

Fox et al. discloses that the same aerosol spray device having same spraying functions as the instant claimed device is useful in a method of precipitating airborne particles. Fox et al. further discloses that the liquid composition which is sprayed from the aerosol spray device is a mixture of water and hydrocarbon, or an emulsion and an anti-bacterial agent. See abstract, page 2 lines 1-20, and claims 1-7.

Fox et al. does not expressly disclose the employment of this aerosol spray device comprising a disinfecting or sanitizing compositions in a method of disinfecting or sanitizing a space occupied by airborne microorganisms and/or viruses. The prior art does also not expressly disclose the disinfecting or sanitizing composition comprising an essential oil as an anti-bacterial or anti-viral agent such as thyme, lemongrass, roses, citronella, eucalyptus, and sandalwood, and quaternary ammonium. Fox et al. does not further expressly disclose the effective amounts of each ingredients in the composition.

McCue et al. discloses the disinfectant and sanitizing compositions having antimicrobial activity comprising essential oils such as thyme, lemongrass, roses, citronella, eucalyptus, and sandalwood, and organic solvent and a surfactant in

amounts within the instant claim.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the aerosol spray device herein comprising a disinfecting or sanitizing compositions in a method of disinfecting or sanitizing a space occupied by airborne microorganisms and/or viruses, and to employ an essential oil as an antibacterial or anti-viral agent such as thyme, lemongrass, roses, citronella, eucalyptus, and sandalwood, and quaternary ammonium in the disinfecting or sanitizing composition, and to optimize the effective amounts of each ingredients in the composition.

One having ordinary skill in the art at the time the invention was made would have been motivated to employ the aerosol spray device herein comprising a disinfecting or sanitizing compositions in a method of disinfecting or sanitizing a space occupied by airborne microorganisms and/or viruses because the same aerosol spray device having same spraying functions as the instant claimed device is known to be useful in a method of precipitating airborne particles. One of ordinary skill in the art would recognize that these airborne particles include airborne microorganism and/or viruses. Moreover, the liquid composition of Fox et al. which is sprayed from the aerosol spray device is known to comprise a mixture of water and hydrocarbon, or an emulsion and an anti-bacterial agent within the instant claim. Thus, Fox et al. therein teaches broadly the usefulness of this aerosol spray device. Therefore, one of ordinary skill in the art would have reasonably expected that this aerosol spray device containing the liquid composition of Fox et al. would be useful in a method of disinfecting or sanitizing a space occupied by airborne microorganisms and/or viruses. Additionally, one of ordinary skill in the art would have been motivated to employ quaternary ammonium and the essential oil herein in the disinfecting or sanitizing composition since quaternary ammonium is well known a disinfectant and sanitizer since it is known that quaternary ammonium has antimicrobial activity. It is also known that the essential oil such as thyme, lemongrass, roses, citronella, eucalyptus, and sandalwood is useful in the disinfecting or sanitizing composition

as an anti-bacterial or anti-viral agent according McCue et al. Further, one of ordinary skill in the art would have been motivated to optimize the effective amounts of active ingredients in the composition herein because such effective amounts of active ingredients in the composition herein have been taught by McCue et al.

Thus the claimed invention as a whole is clearly prima facie obvious over the combined teachings of the prior art.

This rejection is respectfully traversed and reconsideration is requested in view of the following discussion.

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Fox '883 is the primary reference and is concerned with the precipitation of airborne particles, such as dust, from a domestic environment. The gist of the Fox '883 disclosure is that, by using an aerosol spray device which has been constructed so as to impart to the liquid particles a unipolar charge having a charge to mass ratio of at least $\pm 1 \times 10^{-4}$ C/kg, these airborne particles can be caused to precipitate. As recognized by the examiner, Fox '883 does not expressly disclose the employment of an aerosol spray device containing a disinfecting or sanitizing composition and does not disclose a method for disinfecting or sanitizing a space contaminated by airborne microorganisms or viruses.

The use of spray compositions to combat airborne microorganisms and/or viruses is known. However, applicants' invention enables airborne microorganisms or viruses to be eliminated in a more efficient manner. In particular, by imparting to the particles a unipolar charge having a charge to mass ratio greater than is imparted to particle sprayed from a standard device, much less disinfectant or sanitizing agent is required. The individual droplets are attracted to the microorganisms or viruses and, since all of the droplets carry the same polarity charge, they are repelled one from another. Accordingly, there is little or no coalescence of the droplets and they tend to spread out to a greater extent as compared to uncharged droplets or to charged droplets which have a lower

charge to mass ratio. This enables the consumer to eliminate microorganisms and viruses from an indoor space by using a smaller amount of disinfecting or sanitizing composition. As explained in the paragraph beginning at page 2, line 14, of the application, the use of a smaller amount of disinfecting or sanitizing composition reduces attendant health risks.

Furthermore, if the repulsive force from the charge within the droplets is greater than the surface tension force of the droplets, the charged droplets are caused to fragment into a plurality of smaller charged droplets. This process continues until either the two opposing forces are equalized or the droplets have fully evaporated. As these droplets spread out, said droplets – which contain a disinfecting or sanitizing agent – attack the airborne microorganisms and viruses. And the fact that the droplets are being converted to increasingly smaller droplets, to the point where they become fully evaporated, means that little or no liquid droplets will adhere to surfaces in the area treated.

As further explained in the paragraph beginning on page 6, line 4, of the application, the mechanism of attraction between the droplets and the microorganism or virus in effect means that the microorganism or virus is targeted by the liquid droplet. The phenomenon results in greater efficiency, enabling the consumer to use a smaller amount of the disinfectant or sanitizing agent.

The Fox '883 reference is concerned with a method of precipitating airborne particles, such as dust, from indoor spaces. In said method, the airborne particles are contacted with liquid droplets so that the unipolar charge carried by the droplets is transferred between the droplets and the airborne particles. As explained in WO97/28883 – page 1, paragraph beginning at line 15 – the unipolar charge transferred causes the airborne particles to precipitate due to mutual repulsion. The clear purpose of the invention described in the Fox '883 reference is to reduce the amount of airborne dust particles in an indoor space by causing said particles to be precipitated. In contrast, applicants' invention is directed to a method for combating microorganisms and viruses in an indoor space. Said microorganism and viruses are deactivated by the disinfectant or

sanitizing composition and, using the method of the present invention, a higher collision rate between said composition and the microorganism and viruses is achieved than can be achieved by using a standard aerosol dispenser. It is submitted that a person skilled in the art, reading the Fox '883 reference, would not realize the benefit to be obtained by using applicant's claimed method.

The examiner, in apparent recognition of this deficiency, turns to McCue U.S. Patent No. 5,403,587 as secondary art for its teaching of antimicrobial compositions which contain essential oils having antimicrobial properties. The disclosed compositions are specifically directed for use on hard surfaces. See, for example, the text beginning at: col. 1, line 6; col. 2, line 3, 51 and 62; col. 3, line 44 and 50, and also other statements throughout the specification.

Dispensing systems are disclosed at col. 5, lines 44 through 64, and they include pump sprays and aerosols. However, all of these compositions are intended to be applied to hard surfaces and there is no teaching anywhere in the disclosure that they may be sprayed into an indoor space.

The gist of applicants' claimed invention is the use of a spray device which causes a unipolar charge to be imparted to liquid droplets by double-layered charging during the spraying of said droplets from the spray device, with the further requirement that the unipolar charge have a charge to mass ratio at least $\pm 1 \times 10^{-4}$ C/kg. The McCue reference is concerned with the content of the antimicrobial composition, and not with — as are applicants — methods for dispensing the composition. The McCue reference does say that the compositions can be packed into aerosol containers, but there is no recognition that the characteristics of the aerosol container would have any effect on the efficiency of the disclosed compositions. Of course, since McCue is concerned with applying antimicrobial compositions to hard surfaces, the electrostatic properties of individual droplets in the compositions would be of little or no interest.

Some limitations

In summary, therefore, a person skilled in the art would not attempt to combine the teaching of the Fox '883 reference and the McCue reference to arrive at applicants' claimed invention. For this reason, the rejection of applicants' claims under 35 U.S.C. §103(a) should be withdrawn.

DOUBLE PATENTING REJECTION

All of the claims have been rejected for obviousness-type double patenting over certain claims of Fox U.S. Patent No. 6,199,766 ("Fox '766") in view of McCue U.S. Patent No. 5,403,587 ("McCue").

Claims 1-15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U. S. Patent No. 6,199,766 in view of McCue et al. (A, PTO-892).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent are drawn to the same aerosol spray device as the instant claimed device employed in the method of killing flying insect. The claim of the instant application is drawn to the aerosol spray device employed in the method of disinfecting or sanitizing a space occupied by airborne microorganisms and/or viruses. The patent does not disclose the instant claimed composition. McCue et al. teaches similar disinfectant and sanitizing compositions having anti-microbial activity comprising essential oils such as thyme, lemongrass, roses, citronella, eucalyptus, and sandalwood, and organic solvent and a surfactant in amounts within the instant claim. One having ordinary skill in the art at the time the invention was made would have been motivated to employ the same aerosol spray device known to be useful in a method of killing flying insect with McCue's compositions in the instant claimed method since all components employed herein are known. Therefore, one of ordinary skill in the art would have found it obvious to employ this aerosol spray device with McCue's compositions in a method of disinfecting or sanitizing a space occupied by airborne microorganisms and/or viruses.

This rejection is respectfully traversed and reconsideration is requested.

Double patenting rejections are proper where there is some overlap between the claims of an application and those of an issued patent. It is recognized also that obviousness-type double patenting can exist even when there is no actual overlap. However, as the name implies, obviousness is required. It is submitted that if Fox '766 were available as prior art, applicants' claims would not have been obvious thereover. The Fox '766 reference is limited to methods for killing flying insects and claims 1-6, which the examiner cited as involving a double patenting situation, are limited to such methods. Applicants, on the other hand, are claiming a method for disinfecting or sanitizing a space occupied by airborne microorganisms and/or viruses. The differences between the target species are obvious. Fox '766 is targeting visible pests, and does not involve a method of disinfecting or sanitizing an indoor space. On the other hand, the target species of applicants claims are not visible. Furthermore, the insecticides which are part of the composition used in the method claims of Fox '766 are, obviously, quite different from disinfecting or sanitizing composition contained in the spray device used in the claims in the instant application.

The examiner's use of the McCue reference to support this double-patenting rejection does not contribute to the validity of the rejection. As discussed above in connection with the rejection under 35 U.S.C. §103(a), the McCue reference is concerned with antimicrobial compositions intended for use on hard surfaces. It would not be properly combinable with an insecticidal composition designed to combat flying insects in flight.

For the foregoing reason, it is urged that the examiner withdraw the obviousness-type double patenting rejection.

Applicant : Rodney Thomas FORT et al.
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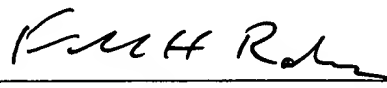
CONCLUSION

In view of the foregoing amendment and these remarks, it is believed that all claims in this application are in condition for allowance. Favorable action is therefore requested.

Respectfully submitted,

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Frederick H. Rabin

Reg. No. 24,488

Fish & Richardson P.C.
45 Rockefeller Plaza, Suite 2800
New York, New York 10111
Telephone: (212) 765-5070
Facsimile: (212) 258-2291

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Appendix A

1. (twice amended) A method of disinfecting or sanitising a space occupied by airborne microorganisms and/or viruses, which method comprises directing into the space liquid droplets from a spray device containing a disinfecting or sanitising composition, a unipolar charge being imparted to the liquid droplets by double layer charging during the spraying of the liquid droplets from the [aerosol] spray device, the unipolar charge being at a level such that said droplets have a charge to mass ratio of at least $\pm 1 \times 10^{-4}$ c/kg.